

International General Certificate of Secondary Education
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE
PHYSICS
PAPER 1 Multiple Choice
MAY/JUNE SESSION 2000

0625/1

45 minutes

Additional materials:
Electronic calculator and/or Mathematical tables
Multiple Choice answer sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

TIME 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not open this booklet until you are told to do so.

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are **forty** questions in this paper. Answer **all** questions. For each question, there are four possible answers, **A**, **B**, **C** and **D**. Choose the **one** you consider correct and record your choice in **soft pencil** on the separate answer sheet.

Read very carefully the instructions on the answer sheet.

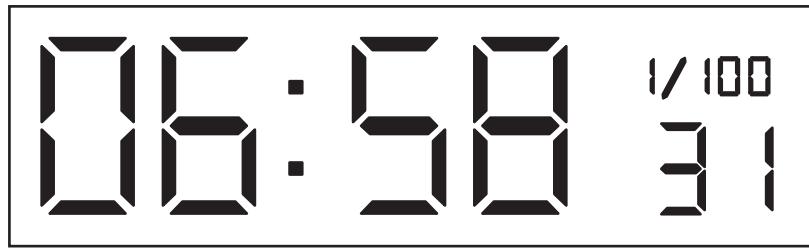
INFORMATION FOR CANDIDATES

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

Any rough working should be done in this booklet.

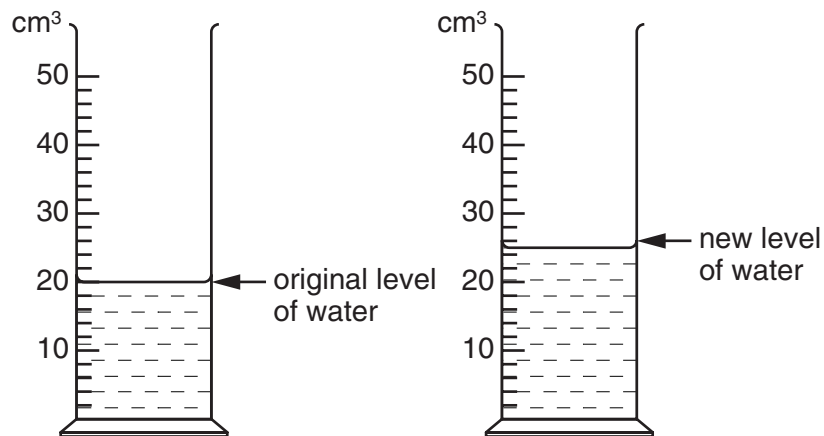
This question paper consists of 18 printed pages and 2 blank pages.

- 1 A stopwatch is used to time a student running a 1500 m race.



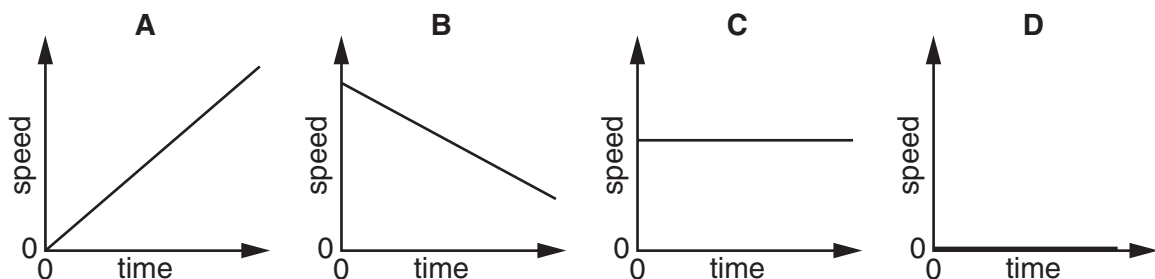
What is the reading on the stopwatch?

- A 658.31 seconds
 B 6 minutes 58.31 seconds
 C 6.58 minutes 31 seconds
 D 6 hours 58 minutes 31 seconds
- 2 A student lets 100 drops of water fall into a measuring cylinder which already contains some water.



What is the volume of one drop?

- A 0.05 cm^3 B 0.25 cm^3 C 5.0 cm^3 D 25 cm^3
- 3 Which speed-time graph represents the motion of a car moving at constant speed?



- 4 A student investigates the speed of a trolley and finds that it is 50 cm/s, and one second later that it is 150 cm/s.

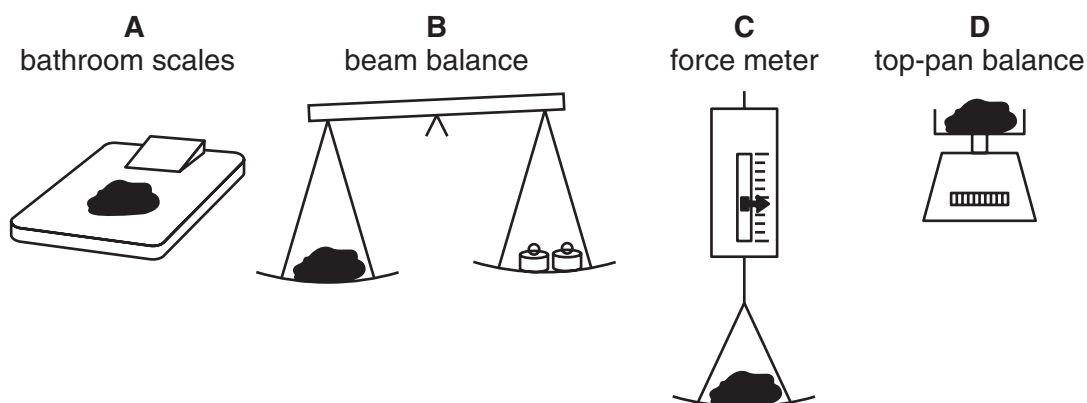
What is the acceleration of the trolley?

- A** 50 cm/s² **B** 100 cm/s² **C** 150 cm/s² **D** 200 cm/s²

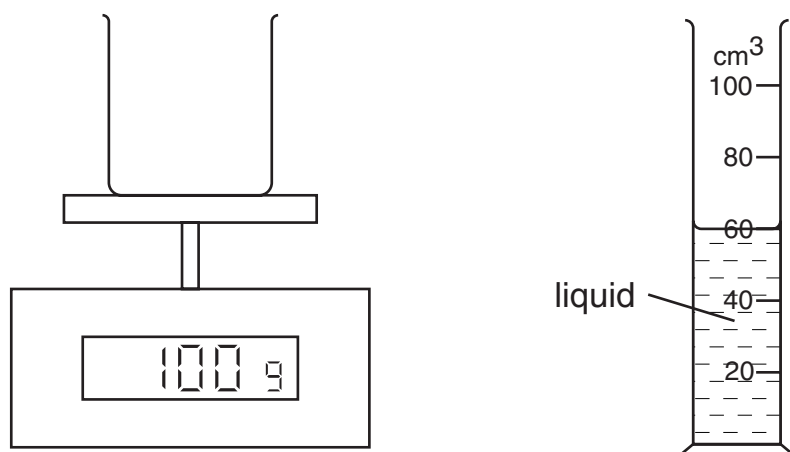
- 5 Which property of an object is measured in newtons?

- A** density
B mass
C volume
D weight

- 6 Which instrument can be used to give a direct measurement of the mass of a rock on the Moon?



- 7 The diagrams show an empty beaker on a balance and some liquid in a measuring cylinder.



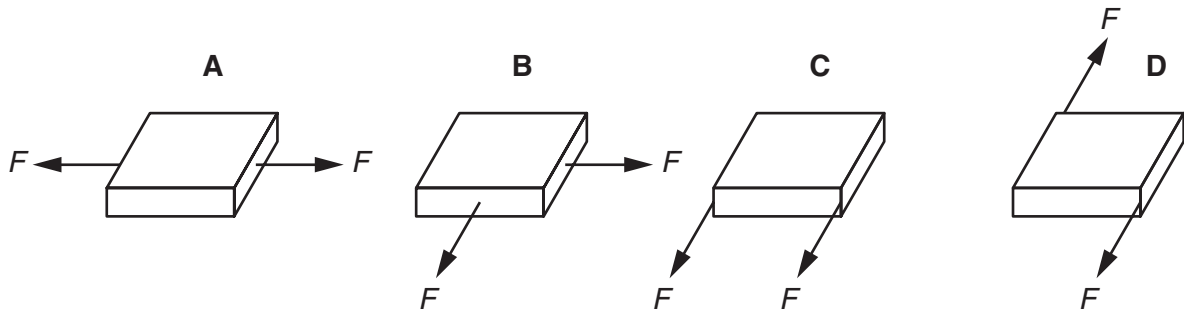
When all the liquid is poured into the beaker, the balance reading changes to 140 g.

What is the density of the liquid?

- A** $(140 \div 60) \text{ g/cm}^3$ **B** $(60 \div 40) \text{ g/cm}^3$ **C** $(40 \div 60) \text{ g/cm}^3$ **D** $(60 \div 140) \text{ g/cm}^3$

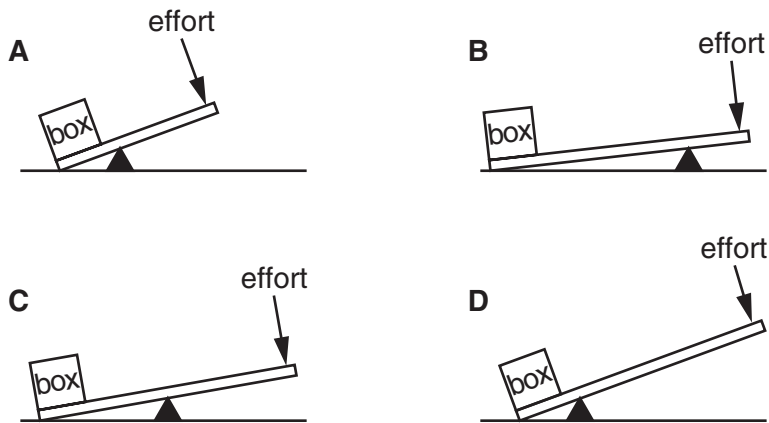
- 8 The diagrams show a brick resting on a smooth surface. Two equal forces, F , act on the brick.

Which brick does **not** move?



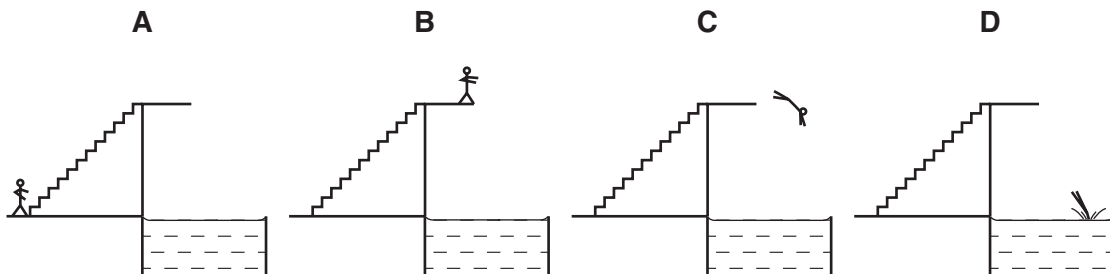
- 9 The diagram shows four ways of lifting a heavy box by using a lever.

Which way requires the **smallest** effort to lift the box?



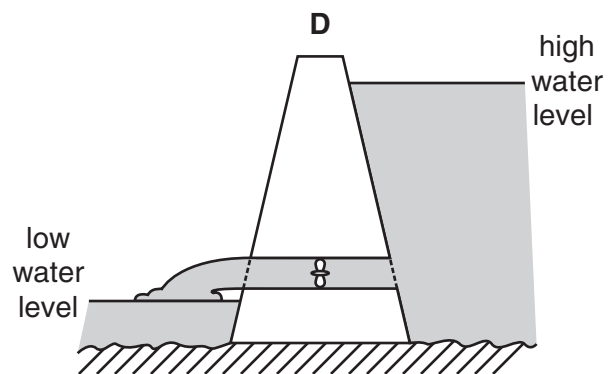
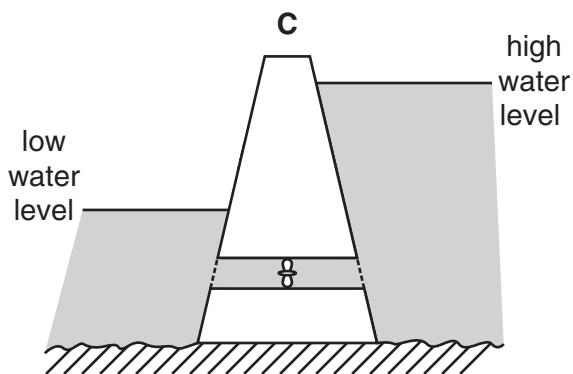
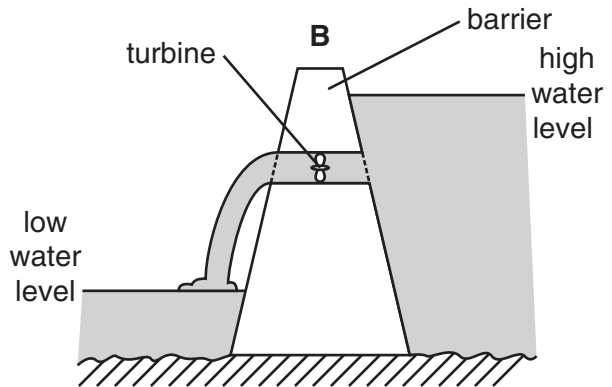
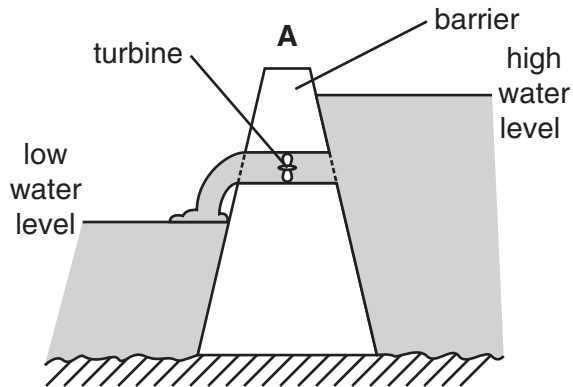
- 10 The diagrams show a diver climbing some steps and jumping off a diving board.

Where does the diver have the most gravitational potential energy (energy of position)?

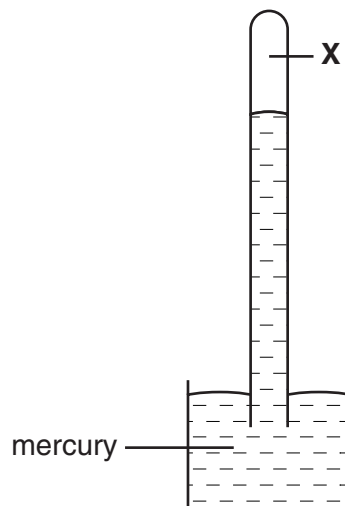


- 11 The diagrams show four schemes which use a barrier to convert tidal energy into electrical energy.

Which scheme has the greatest output of electrical energy?



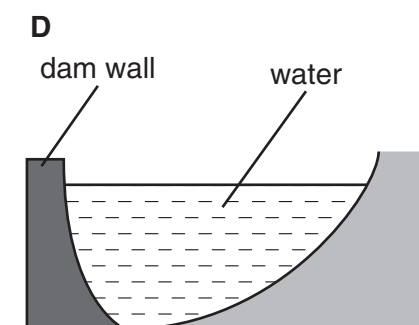
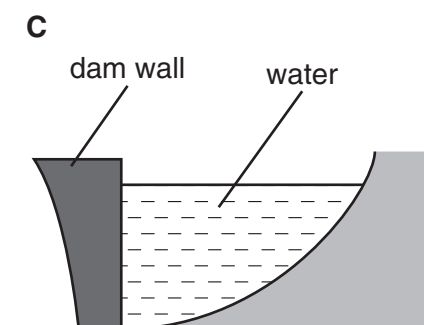
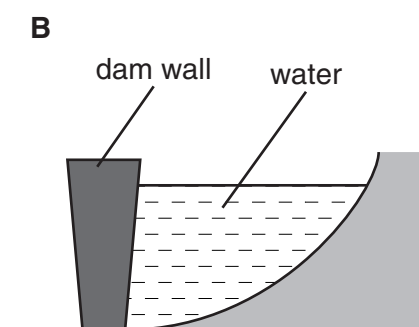
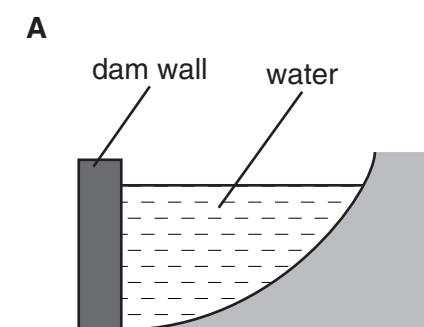
- 12 The diagram shows a mercury barometer.



What is at X?

- A air at atmospheric pressure
- B air at high pressure
- C a vacuum
- D water vapour

13 Which diagram shows the best shape for a dam wall?



14 A fixed mass of gas is kept in a sealed cylinder, so that its volume does not change.



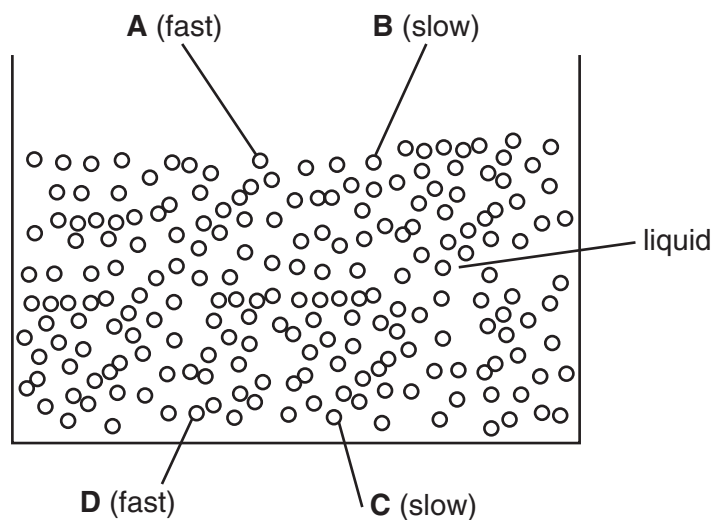
How does a change in the temperature affect the pressure of the gas?

	temperature change	pressure change
A	decreases	increases
B	decreases	unchanged
C	increases	decreases
D	increases	increases

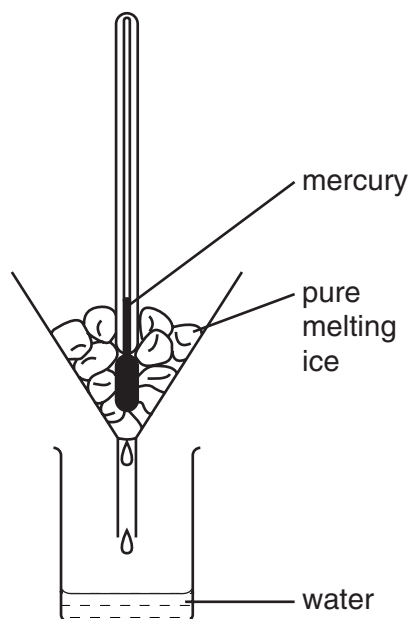
15 The diagram shows some molecules in a liquid.

Molecules **A** and **D** are fast-moving, molecules **B** and **C** are slow-moving.

Which of these molecules is the most likely to escape from the liquid by evaporation?



16 A mercury thermometer without a scale is placed in pure melting ice.

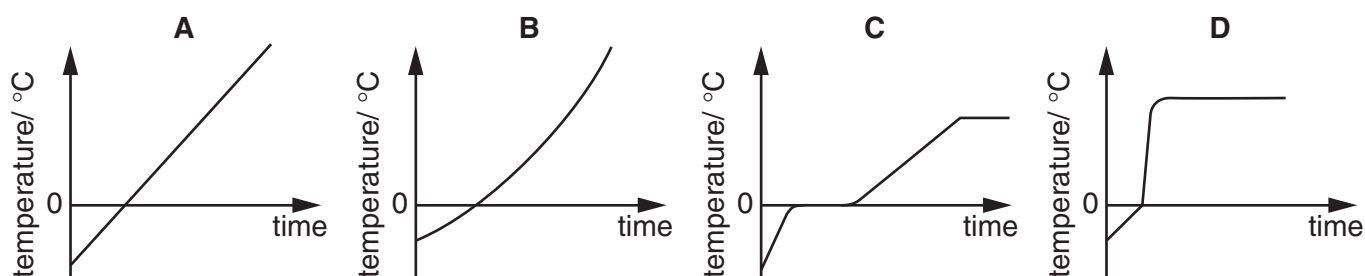


What does the level of mercury in the thermometer show?

- A** the boiling point of water
- B** the lower fixed point
- C** the melting point of mercury
- D** the upper fixed point

- 17 Some ice is heated at a constant rate in a beaker. The ice melts and later the water boils for a short while.

Which graph shows how the temperature changes with time?

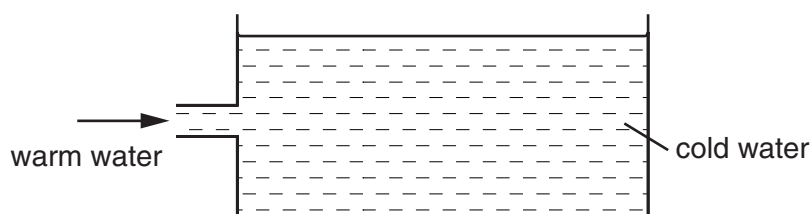


- 18 A person lifts a hot pan from a stove. Although the pan is hot, the handle is cool.

What is the handle made of?

- A aluminium
- B copper
- C iron
- D wood

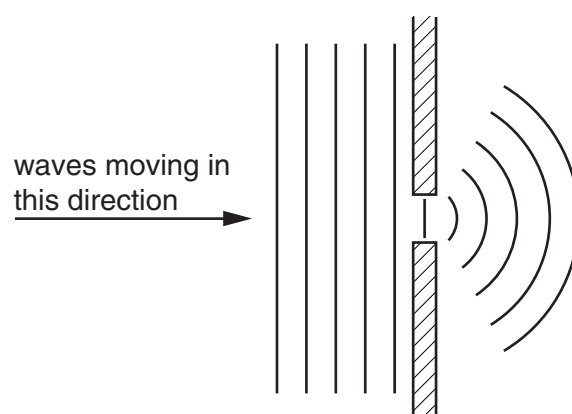
- 19 Warm water enters a tank of cold water from the side.



What happens to the warm water and why?

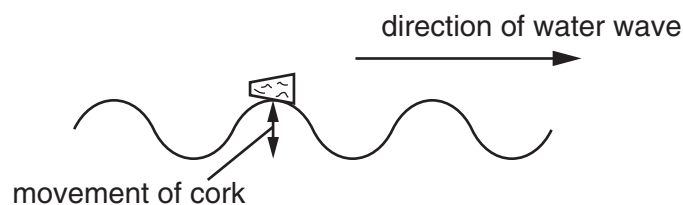
	warm water	why?
A	rises	It is less dense than cold water.
B	rises	It is more dense than cold water.
C	sinks	It is less dense than cold water.
D	sinks	It is more dense than cold water.

- 20 Plane waves produced in a ripple tank arrive at a barrier that has a small gap.

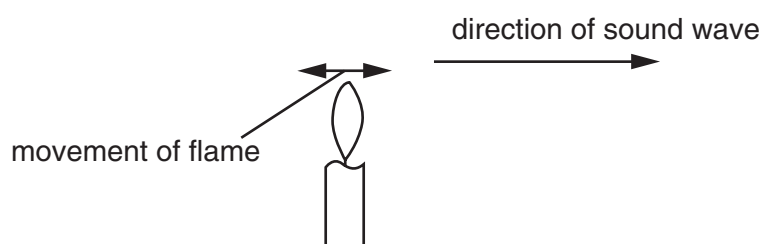


What causes the wave pattern that is produced beyond the barrier?

- A diffraction
 - B dispersion
 - C reflection
 - D refraction
- 21 A floating cork moves up and down as a water wave passes it.



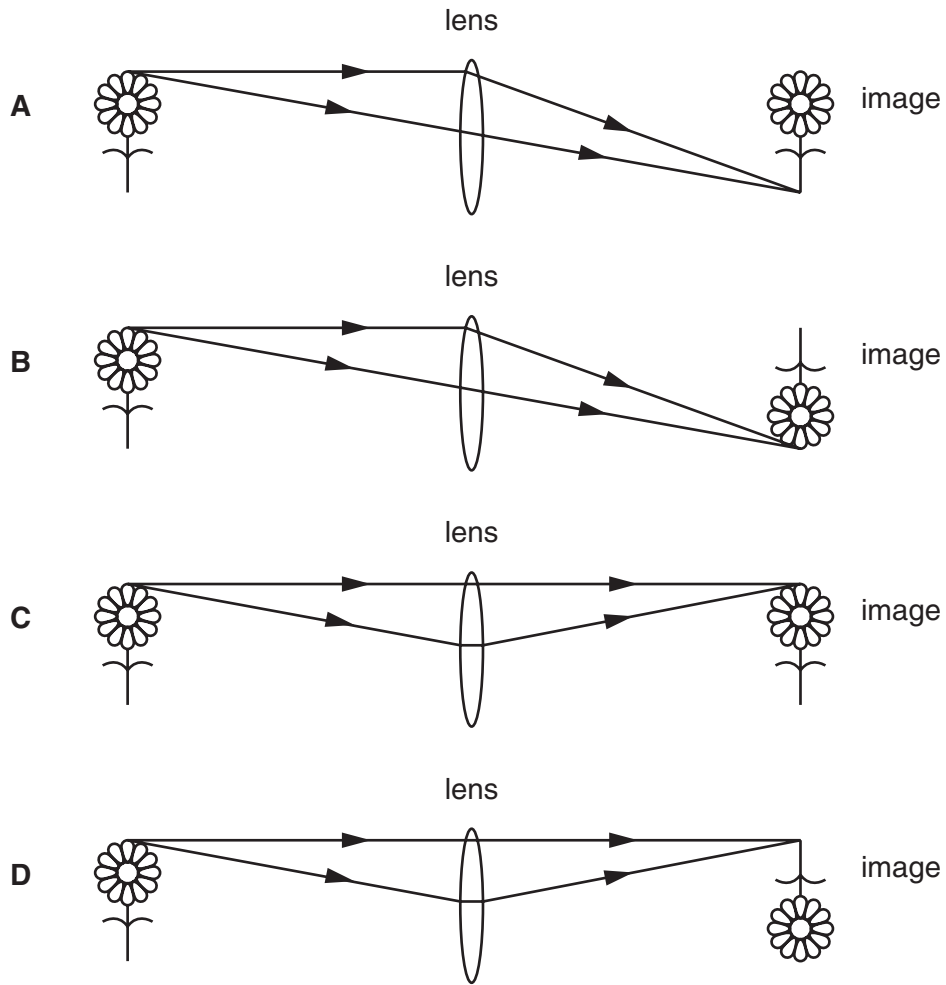
A candle flame moves backwards and forwards as a sound wave passes it.



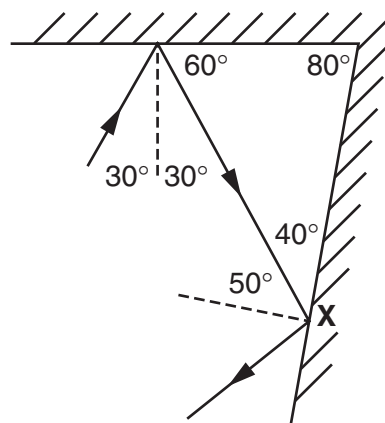
What does this show about water waves and sound waves?

	water waves	sound waves
A	longitudinal	longitudinal
B	longitudinal	transverse
C	transverse	longitudinal
D	transverse	transverse

22 Which diagram shows how a real image is formed by the lens?



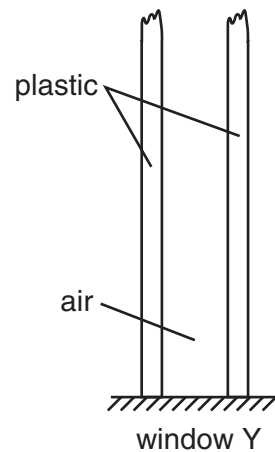
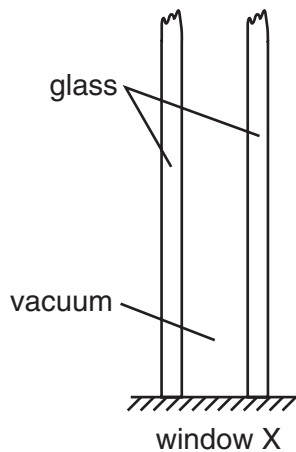
23 A ray of light is reflected from two mirrors as shown.



What is the angle of reflection at point X?

- A 40° B 50° C 60° D 80°

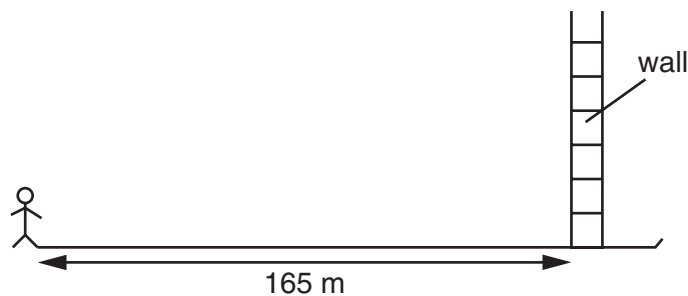
- 24** Two windows are double-glazed. Window X is made of two pieces of glass with a vacuum between them. Window Y is made of two pieces of plastic with air between them.



Which window is better at stopping sound passing through and why?

	window	why?
A	X	Sound cannot travel through a vacuum.
B	X	Sound cannot travel through glass.
C	Y	Sound cannot travel through air.
D	Y	Sound cannot travel through plastic.

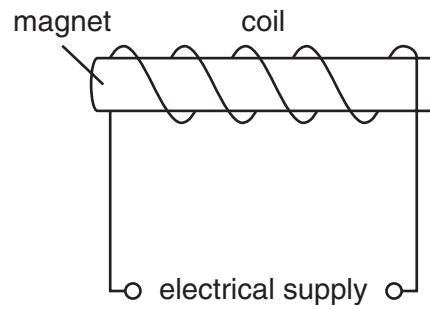
- 25** The diagram shows a student standing 165 m in front of a wall. He claps his hands once.



How long after the handclap does he hear the echo?
[The speed of sound in air is 330 m/s.]

- A** 0.25 s **B** 0.50 s **C** 1.0 s **D** 2.0 s

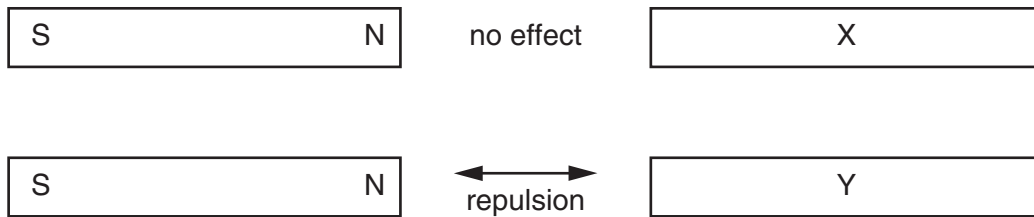
- 26** A magnet is placed in a coil connected to an electrical supply.



What is the best way to demagnetise the magnet?

- A** Use a d.c. supply and leave the magnet inside the coil.
- B** Use a d.c. supply and slowly remove the magnet from the coil.
- C** Use an a.c. supply and leave the magnet inside the coil.
- D** Use an a.c. supply and slowly remove the magnet from the coil.

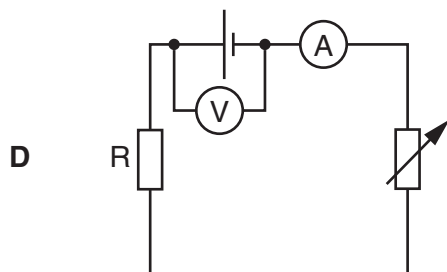
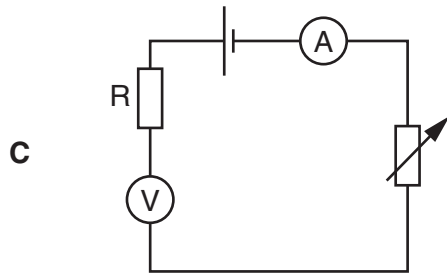
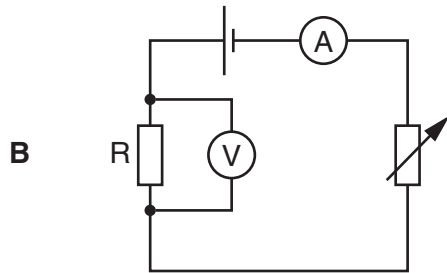
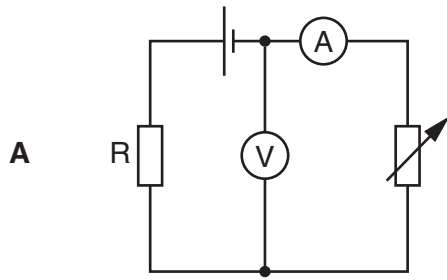
- 27** A magnet is brought near metal bars X and Y.



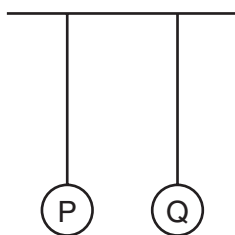
What are X and Y made of?

	X	Y
A	aluminium	magnetised steel
B	aluminium	unmagnetised iron
C	unmagnetised iron	magnetised steel
D	unmagnetised iron	unmagnetised iron

- 28 Which diagram shows how a voltmeter and an ammeter are connected to find the value of the resistance of resistor R?

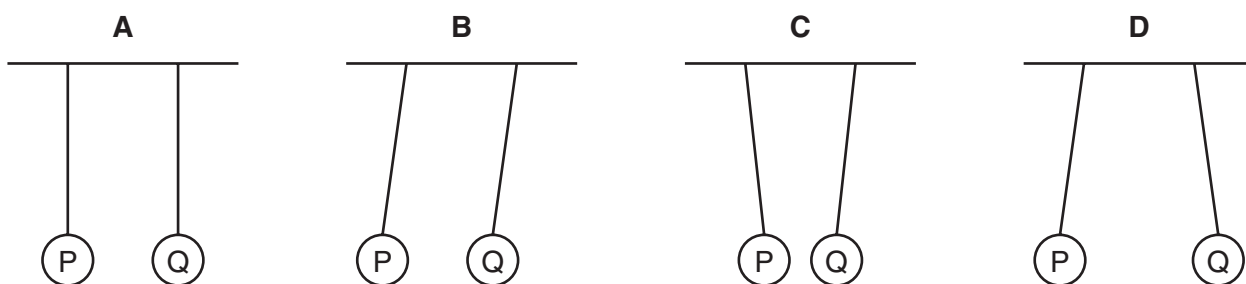


- 29** Two uncharged metal-coated polystyrene spheres, P and Q, are suspended side by side.

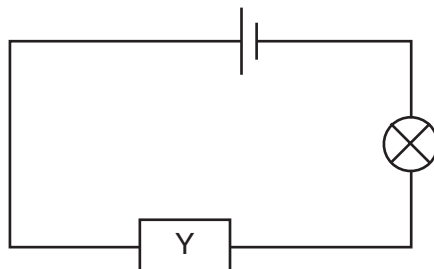


Both spheres are then given positive charges.

Which diagram shows the new positions of the spheres?



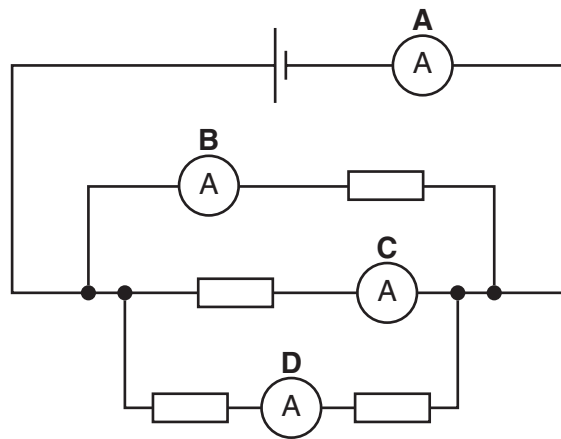
- 30** Component Y is placed in the circuit shown and is used to reduce the brightness of the lamp gradually.



What is component Y?

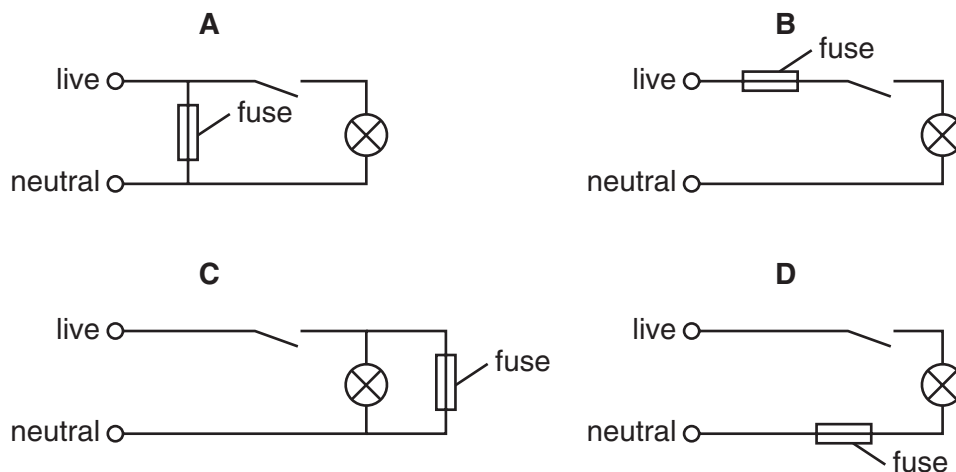
- A** a fuse
- B** a relay
- C** a switch
- D** a variable resistor

- 31 In the circuit, which ammeter shows the greatest reading?



- 32 A lamp is connected across the mains supply.

Which diagram shows where the fuse should be connected?



- 33 An electric kettle takes 12 A of current from the mains supply. When the kettle's cable needs to be replaced, a 5 A cable is used that was originally attached to a small lamp. The original plug and fuse from the kettle's cable are used.

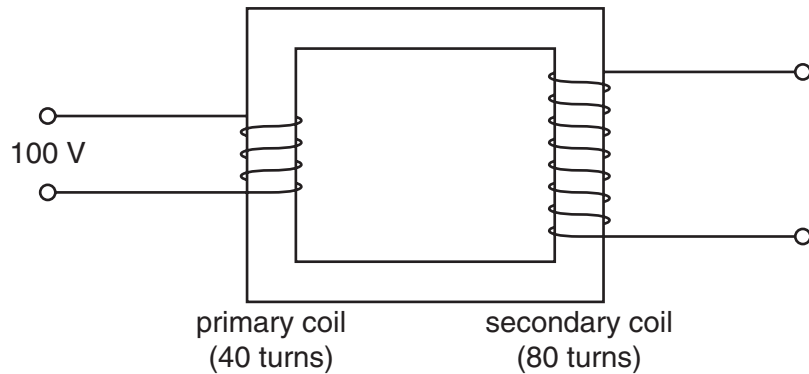
Why does this cause a problem?

- A The cable becomes hot and melts the insulation.
- B The fuse blows as soon as the kettle is switched on.
- C The kettle becomes too hot.
- D The water takes too long to reach its boiling point.

34 Which device makes use of the magnetic effect of an electric current?

- A electric bell
- B electric fire
- C fuse
- D lamp

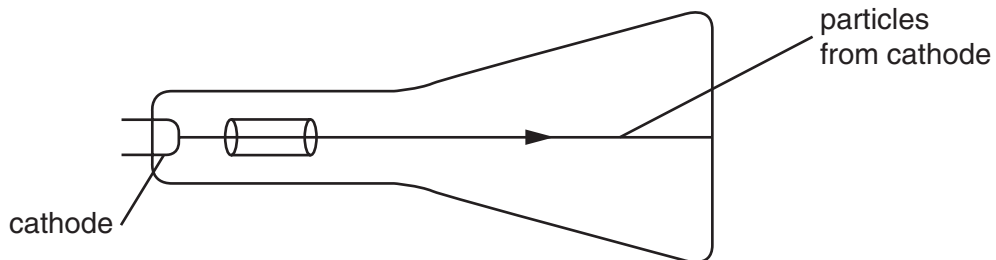
35 The diagram shows a transformer, with 100 V applied to the primary coil.



What is the voltage across the secondary coil?

- A 50 V
- B 100 V
- C 200 V
- D 800 V

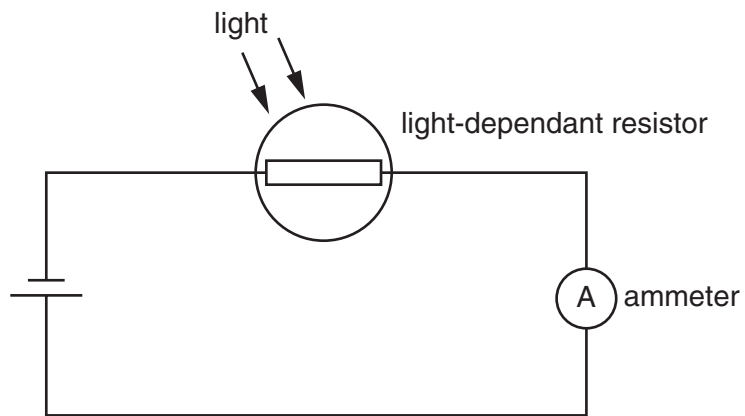
36 The diagram shows part of a cathode-ray oscilloscope.



Which particles are emitted by the cathode?

- A alpha (α -) particles
- B electrons
- C neutrons
- D protons

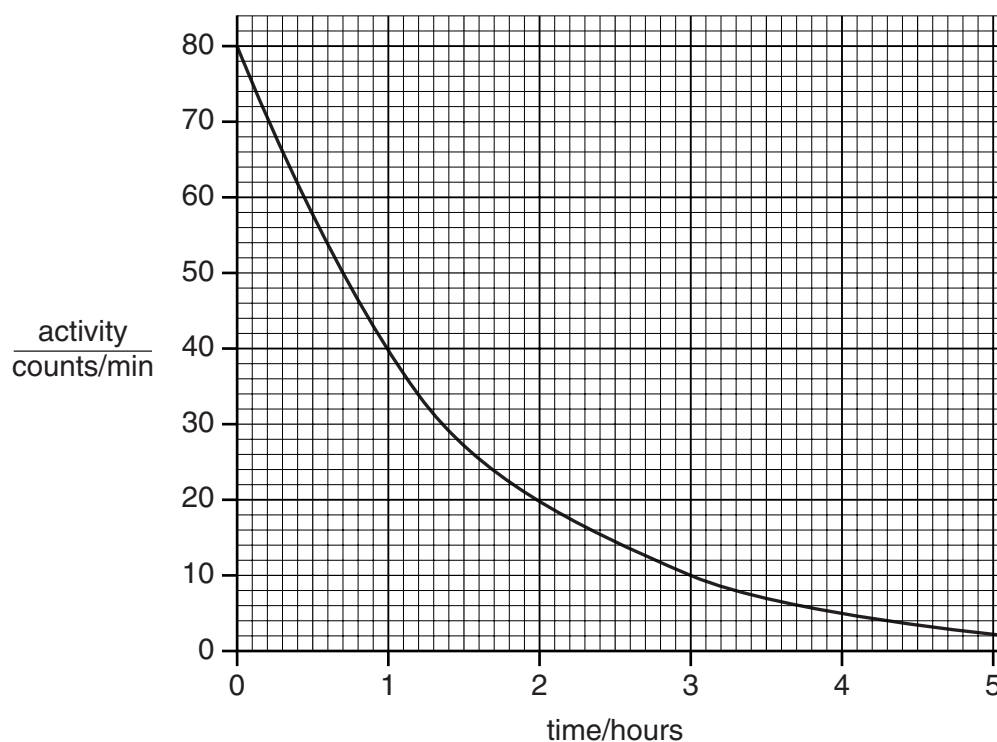
- 37 In the circuit shown, the brightness of the light reaching the light-dependent resistor increases.



What happens to the current through the ammeter?

- A It becomes zero.
 - B It decreases.
 - C It does not change.
 - D It increases.
- 38 Which statement about an alpha (α -) particle is correct?
- A It can pass through thick paper.
 - B It has no charge.
 - C It is a helium nucleus.
 - D It is a type of electromagnetic radiation.

- 39 The graph shows the activity of a radioactive source plotted against time.



After what time is the activity one quarter of its original value?

- A** 1 hour **B** 2 hours **C** 3 hours **D** 4 hours

- 40 A nuclide of cobalt is shown by the symbol ${}^{60}_{27}\text{Co}$.

How many protons and neutrons are there in the nucleus of this nuclide?

	protons	neutrons
A	27	33
B	27	60
C	60	27
D	60	87

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